Statistics: Lecture 0 - Administration

Jan Bauer

jan.bauer@dhbw-mannheim.de

18.11.19

About me:

- Mathematics-Economics M.Sc (Københavns Universitet, 2017)

- Research Assistant (PhD Student) at the chair of Management (JGU Mainz, 2018)

- Research Assistant (PhD Student) at the chair of Business Informatics (DHBW, 2019)

- Research interests: (Time Series) Econometrics, Macroeconometrics & passion for everything statistic-ish

About you:

- Solid background in set theory, matrix algebra & limit theory

- Python coding skills (presumably more than I have)

- Recap the lecture to not loose track

- Looking for typos (thank you)

- In-lecture-feedback (pace, difficulty,...)

- Caution: The module is going to be a tough one

About the lecture:

Base

- Analysis & Linear Algebra

Now

STATISTICS

Future

- Computer Science
  - Machine Learning
  - Data Analysis

- Even more Statistics/Probability Theory/Econometrics
  - Crazy math stuff that will certainly not impress anyone on a party

- (Applied) Econometrics
  - Macroeconometrics
  - Microeconometrics
  - Financial Econometrics

About the lecture:

1. Probability Theory & Random Variables
2. Random Variables and (Discrete) Probability Distributions
3. (Continuous) Probability Distributions & Bivariate Extensions
4. Covariance & Correlation and Introduction to Statistics
5. Estimation
6. Hypothesis Test
7. Hypothesis Test
8. Assignment 1
9. Linear Regression
10. Multivariate Linear Regression
11. Assignment 2
12. Time Dependent Data
13. Analysis of Variance & Experimental Designs
14. Assignment 3

Administrative Things

- Lecture times: Two times a week (as regular as possible)

- Slides: github.com

- 14 lectures of 90min each

- Three Assignments (bonus points for exam)

- Exam

- Sources:

    - Lecture Notes
    - Fundamentals of Probability and Statistics for Engineers (Soong, 2004)
    - Introduction to Econometrics (Stock & Watson, 2015, 3rd)
    - Probability and Mathematical Statistics - An Introduction (Lukacs, 1972)
    - Statistics for Business and Economics (Newbold, Carlson & Thorne)

- Questions? E-mail me!

Exam

- Date (?)

- 60 minutes & 30 questions

- Aids: Open book exam & non-programming calculator

- Multiple choice (Y/N)

- +1 point for a correct answer, -1 for a wrong one (0 for blanc)

- **Relevant topics:** Everything discussed in **lecture** and in the **Assignments** (especially the coding part!)

Assignments

- Three Assignments

- Theory & coding Part

- Bonus points: 2, 1.5, 1, 0.5 or 0 each assignment

  ↝ maximum of 6 points

- Solutions will be provided during lecture

Assignments Organisation

- Hand in in groups of 3-5 (group name & student numbers)

- Hand in **during/right after** lecture when it is due

- Submission: code → e-mail (subject: Assignment X Statistics - Group Name)

  rest → during/after lecture

Assignment	Upload	Submission	Parts covered
Assignment #1	27.11.19	11.12.19	Theory
Assignment #2	11.12.19	08.01.20	Theory & Coding
Assignment #3	08.01.20	22.01.20	Theory & Coding

- Theory part: Printed Assignment containing your answers
- Coding part:
  - Code file (e-mail)
  - copy code + code output (e.g. into Word) (printed)

Overall Grading

- Exam: 30 questions. Passing: 15 points (4.0). Best grade: 30 points (1.0)

- Maximum failure ratio: 40% (otherwise points will be adjusted)

- Bonus points are added to your exam points.
    - Example: Got 6 bonus points and achieve 9 points in exam
      $\rightsquigarrow 9 + 6 = 15 \rightsquigarrow 4.0$
    - Example: Got 4 bonus points and achieve 26 points in exam
      $\rightsquigarrow 26 + 4 = 30 \rightsquigarrow 1.0$

Workload

- Time of attendance: 28h (14·90min)

- Self-study: 47h
  - 32h assignments & lecture recap

  - 15h exam preparation

Before we start: Survey

- height (cm)

- size of shoe

- distance from "home" to DHBW (km)

- gender (f/m)